THE OPTICAL MAGIC LANTERN JOURNAL AND PHOTOGRAPHIC ENLARGER

A MAGAZINE OF POPULAR SCIENCE FOR THE LECTURE-ROOM AND THE DOMESTIC CIRCLE.

EDITED BY J. HAY TAYLOR.

WITH WHICH IS INCORPORATED THE "LANTERN WORLD."

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NOTICES.

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NOTES.

Death of Mr. Charles Darker.—We regret to have to announce the passing away of Mr. Charles Darker. In the olden days of lantern work Mr. Darker was well known to the lantern fraternity of the last generation, being as it were quite behind the scenes in connection with the old Polytechnic. Mr. Darker was provided with a vast store of humorous anecdotes in connection with minor mishaps, practical jokes, etc., which took place in the olden lantern days. These he promised to our readers in the form of a series of articles, but his death occurred ere he had written them. Of late years Mr. Darker has devoted most of his time exclusively to scientific trade work in connection with the higher class of lantern and microscopic adjuncts, and his advice was sought and greatly valued by many eminent men.

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Acetylene Gas Companies.—It is but a short time ago that quite a number of companies were started for the manufacture of generators for the production of acetylene gas. It would be interesting to know what percentage of them are still in existence, for there has been a sad falling off somewhere.

The late Prof. Pepper.—As promised in last issue, an interesting memoir of the late Prof. Pepper, from the pen of Mr. Edmund H. Wilkie, will be found on another page.

◆ ◆ ◆

Paul *

Trick Film Tableau.—Those who have had much experience in connection with taking pictures on cinematographic films, know that it is by no means a difficult task to produce the most absurd, yet realistic looking effects by means of judicious stops, rejoining and other devices. One of the latest "fakes" has been produced by Mr. R. N. Paul, entitled "Kruger's Dream of Empire." When the scene opens the stage is occupied by a bust of Oom Paul and a large frame on which is boldly written "On Majuba Day England was defeated." Oom Paul enters and observes this with evident delight. He sits down in an arm-chair and dozes. The legend in the frame changes to a striking cartoon entitled "Kruger the Conqueror," in which Kruger himself is seen with one foot on a recumbent figure of Lord Roberts, and a rifle in one hand and a Bible in the other. To the real Kruger in his chair enters Mr. Joseph Chamberlain with the British crown on a silken cushion. He kneels and presents this to Kruger, but, as Kruger stretches forth his hands to grasp it, it vanishes in a puff of smoke. Kruger is rudely awakened from his illusion, and while he gazes on the cartoon it suddenly changes to the words "On Majuba Day Cronje Surrendered." In his rage he rushes to seize Chamberlain, but the latter suddenly disappears, and at the same time the bust of Kruger changes to a bust of Queen Victoria, which Kruger endeavours to overthrow. While doing so four men in khaki enter and seize him, placing him on a pedestal. They drape him with the Union Jack. Two of the men step forward and fire on Kruger. As the shot is fired Kruger vanishes and his place is taken by a stately figure of Britannia.

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Acetylene Gas in Church.—The Vicar of Surfleet intends to provide good illumination in his church, and has obtained permission from the Spalding Rural District Council to keep a supply of 112 lbs. of calcium carbide in stock in order that there may be no fear of the church generators running short.

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Servia must not use the Acetylene Light.—The importation of calcium carbide into Servia has been forbidden, because acetylene would have a tendency to diminish the value of the Government petroleum monopoly.

39,000 Candle-power.—A lighthouse is to be erected on the Bass Rock, Berwick. Every half minute six flashes, each of 39,000 candle-power, will be projected in quick succession.

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Greenock Camera Club.—A ladies' section has been formed in connection with the Greenock Camera Club. Nearly a score of ladies have already joined.

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Lanternist to the Government.—A reader in India informs us that Professor Krishnasamy Iyengar, who has for a long time past been travelling in the Mysore district exhibiting educational slides, has lately been appointed as Government lantern exhibitor for the Province of Mysore. The same reader also asks if in England when a lantern exhibition is given before the Queen, the lantern operator is allowed to use the Royal Arms and proclaim himself "Lanternist to H.M. The Queen." So far, we have not seen this used by any operator, although we have a recollection of having seen on a lantern lime maker's circular some time ago, "Manufacturer of limes to Her Majesty The Queen."

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Ashton-under-Lyne Photographic Society.—Arrangements have been made by the Hon. Secretary of this Society (Mr. R. T. Marsland, 24, Park Parade, Ashton-under-Lyne) for a week's holiday for members and friends with Bettws-y-Coed as a centre. All expenses will be covered for about £3 10s. each. The same society will hold their fourth annual exhibition from November 12th to 17th. The exhibition is an invitation one, and carriage of all exhibits is paid for both ways by the society.

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Cinematographic Fire.—Early last month at the Boston fair, what is described as the "fireproof" apparatus became ignited, and within a few minutes a large booth had ceased to exist.

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Optical Assistant or Bricklayer.—The following advertisement appears in a contemporary:—

> SMART YOUNG MAN WANTED, well up in optics, willing to make himself useful and capable of doing small repairs. Wages 25/- to 30/- weekly. Apply—Box 674, c/o THE PHOTOGRAPHIC DEALER, Harp Alley, Farringdon Street, London, E.C.

"Well up in optics" means years of study and expense. Keeping up an appearance when one has obtained such a lucrative appointment as that mentioned is an item, so from a money making point of view, the bricklayer's labourer is much better off in comparison.

Window Transparencies.

By A. J. H.

Continued from page 66.

THE exposure when made by contact in the printing frame should be by gas or artificial light, the frame being held at about 18 inches or more from the source of illumination. In vignetting the distance should be increased to 5 or 6 feet, so as to avoid harsh shadows around the vignette.

The frame, whether vignetting is employed or not, should be covered with tissue on the outside. Then portions which would be liable to print too intense while the high lights were exposing, should be shaded by masks kept in gentle motion to prevent impression of definite outlines on the plate.

The duration of exposure will, of course, depend upon the character of the negative. On general principles it is best to give full exposures. And here we may say that a rather soft negative yields much more harmonious positives than a contrast negative—inasmuch as vigour, if necessary, may be given to the positive during development by regulation of its constituents and by judicious use of restrainers.

Ferrous oxalate is generally used as a developer, but equally good results may be secured with the employment of the new developers.

Pyro has a tendency to discolour the film, especially if soda is used as an alkali. The addition of a considerable amount of sodium sulphite to the pyro developer, a good washing after development, and clean fixing will ensure bright positives.

If the ferrous oxalate is used as a developer, though it may be antiquated, the operator will be delighted with the exceeding beauty of the positive, which no other mode of development can exceed. Never use even a slightly turbid ferrous oxalate developer, and always use in connection with it a few drops of citric acid (10 per cent. solution), and also a few drops of a 10 per cent. solution of bromide of potassium. A few drops of syrup (sugar 1 part, water 10 parts) will give density and body to a positive, and a delightful crisp relieved appearance.

If the ferrous oxalate developer is not used, the following mixed developer will be found to work well:—

a.	Hydroquinone	80 grains.
	Eikonogen	80 grains.
	Sulphite of soda	1 ounce.
	Water	32 ounces.
	Sulphuric acid	1 drachm.
b.	Carbonate of potassa	2 ounces.
	Sulphite of soda	1 ounce.
	Water	32 ounces.
c.	Bromide of potassium	1 ounce.
	Water	4 ounces.

Use equal parts *a* and *b* with 5 drops of *c*.

The ferrous oxalate developer generally gives results beautiful enough without toning, but if one desires to tone the transparency any particular colour any of the well-known toning baths of platinum, gold, uranium, palladium, etc., may be used.

Palladium gives a most beautiful dark purple tone if very dilute bath is used and the action long continued. The writer has made quite a number of toned transparencies with the use of palladium, very dilute, and continuing the action by means of a mechanical rocker for 8 or 10 hours.

The following method gives beautiful tones:—

First tone with gold, 1 grain to 1 ounce of water, wash off the plate, and intensify with the following:—

Bichloride of mercury	½ ounce.
Chloride of copper	½ ounce.
Hydrochloric acid	5 drops.
Water	16 ounces.

Rock the plate in this solution until the image is bleached through to the back; then blacken with weak ammonia water.

Russet tones may be had by developing the image up to a certain degree—not full density. Then washing off thoroughly and immediately placing the positive before fixing in the above mercurial solution until the image entirely disappears; then washing it most thoroughly and fixing in the hypo.

The hypo sulphite restores the bleached-out image. The colour of this image so obtained may be modified further by toning with gold.

If after development and fixation the transparency is subjected to a toning consisting of:—

Iodide of iron	1 drachm.
Water	16 ounces.
Iodine, tinct.	5 drops.

a most beautiful opalescent effect is produced, together with a pleasing rose colour of the image. Such transparencies need no ground glass, and may be advantageously employed for ornamental screens for lamps, etc. To prevent scratching of the surface of the film they may be mounted under plain glass, or the film itself may be hardened by bathing the plate in a solution of formaldehyde:—

Formaldehyde	1 drachm.
Water	8 ounces.

Professor Pepper—A Memoir.

By EDMUND H. WILKIE.

(LATE ROYAL POLYTECHNIC INSTITUTION.)

WITH the recent death of Professor John Henry Pepper, who passed away at the ripe old age of 79 years, disappeared one of the principal of the now fast diminishing band of lecturers formerly attached to the staff of the late Royal Polytechnic Institution.

Although a man of solid scientific attainments, his name will doubtless be more familiar to the world in general in connection with the great success of the optical illusions produced by him at the Institution and elsewhere.

These illusions were not all of his own invention or arrangement, but it was owing mainly to his keen insight, his correct judgment as to the public taste, and his wonderful "showman" instinct, that they became so popular, and obtained so great a notoriety.

Born in London on the 17th of June, 1821, he lectured occasionally as a young man at the Literary and Scientific Institution, Westminster, where my old friend Mr. George Buckland, his contemporary at the Polytechnic in after years, made his first bow to the public.

It appears one of the ironies of this life that the name of a sound scientific teacher and analytical chemist—as Mr. Pepper undoubtedly was—a brilliant lecturer and writer, a profound thinker and

practical astronomer,

to whom the phenomena and mechanism of the heavens formed a life's study, should descend to posterity as the exhibitor of a startling conjurer's trick; but such will undoubtedly be the case.

To most of the outside world, Professor Pepper's name conveys no more information than that he introduced "The Ghost," but to those who knew him well, and had the privilege of listening to his many brilliantly successful lectures, the arrangement of this particular illusion ranks as only one of his many valuable additions to our scientific recreations.

His style of lecturing was conversational and fluent, and his elocutionary powers were of a high order, as was evidenced in his Shakesperian quotations introducing some of the illusions. His voice was clear, far reaching, and of a kind that commanded attention; while the matter of his lectures was so arranged that his hearers were led onwards, step by step, until they became absorbed, and the time devoted to the subject seemed all too short.

As so many different accounts have appeared from time to time, each professing to explain how far Mr. Pepper was actually concerned in the production of the famous "Ghost" illusion, it appeared to the writer that the time was ripe to place upon record the true facts of the case, these facts having been gathered partly from personal observation, and partly from information supplied by the Professor himself. Some accounts give him all the credit of the invention, and some deprive him of any merit at all, but the actual state of the case is as follows.

It was the custom at the Polytechnic to invite inventors to deposit models of their inventions in the Great Hall of the Institution, with the double purpose of bringing them before the public and also of increasing the attractions of the Institution itself.

Under these circumstances Mr. Dircks, an engineer, who had devoted considerable attention to "Ghosts," and written a book upon the subject, deposited a model of an apparatus for producing an optical illusion representing a ghost, but the capabilities of this apparatus were so limited that it remained an

ingenious idea

which was simply a curiosity, the difficulties lying in the way of its practical use seeming insuperable.

By Mr. Dircks's method, Professor Pepper stated, the whole theatre must be sacrificed to the ghost, only a very limited number of persons could witness the illusion at a time, and then from one portion of the auditorium only.

Mr. Pepper having inspected the model in the hall of the Institution, at once grasped the possibilities of the idea and set to work experimenting with a view to removing its disabilities and putting it into a form suited for general public exhibition.

Having succeeded in reducing the illusion to a practicable form, Mr. Pepper arranged to produce an entertainment at Christmas, 1862, founded on the novel "A Strange Story," and when the arrangements were completed, a number of friends were invited to an informal show, what we should in a theatre term a dress rehearsal, to inspect this novelty.

Professor Pepper said that up to that evening he had no intention of making any secret of the means by which the appearances and disappearances were worked, but the effect upon his audience at the private view was so much greater than had been anticipated, that the next morning he went to a patent agent and gave instructions for immediately taking out a provisional patent, which was afterwards in due course completed.

The patent was in the joint names of Messrs. Dircks and Pepper, but I have always understood that Mr. Dircks, in the most handsome manner, abandoned to Professor Pepper any pecuniary advantage that might accrue.

An account of Mr. Pepper's connection with this matter, which recently appeared in a public print, stated that when first exhibited the real figure was placed behind the wings, and the glass being at an angle of 45 degrees with regard to the figure, reflected it.

This is an error; it is true that in after years when a smaller plate of glass was used that it occupied the position described, but in its original form the figures to be reflected were placed between the glass plate and the audience.

A great amount of uncertainty seems to exist with regard to Mr. Sylvester's connection with the illusion, but his addition was not a radical difference in the

method of production,

but simply an improvement in the method of reflection, by means of which the ghost, which had previously been confined to one spot, was enabled to roam the stage at will.

To describe these alterations in detail would occupy too much space here, so I must refer those who wish to go further into the matter to a series of articles on illusions which appeared in the columns of this Journal commencing September 1st, 1894, and which I had the honour* of contributing for eight months.

It was estimated that during the fifteen months which this entertainment ran, no less than two hundred and fifty thousand persons witnessed the illusion at the Polytechnic, and when its popularity began to decline it was re-dressed in other stories such as Dickens' "Christmas Carol," "The Haunted Man," "The Knight watching his Armour," etc.

Following this came a series of illusions in the arrangement of which Professor Pepper was materially assisted by Mr. Thomas Tobin, who was secretary to the Polytechnic, *not* assistant to Mr. Pepper, as has been recently stated.

The Professor in introducing several of these illusions gave most of the credit to Mr. Tobin, and there is little doubt that he originated the ideas, which Mr. Pepper afterwards elaborated.

It was at this period that many of the most magnificent of the dissolving view pictures and effects were introduced, as Mr. Pepper spared no pains or expense to render this portion of the exhibition as perfect as possible. The designs were prepared with care, a large number being painted in water colour by Mr. Hine on a large scale, and afterwards reduced by photography to 7 inches long by 6 inches high, which formed the stock size of the majority of the large slides used in the Institution. The combination of optical illusions and these magnificent dissolving views formed a most attractive class of entertainment, and for nearly 10 years Mr. Pepper, by producing a constant succession of novelties on these lines, kept the old Polytechnic Institution at the full tide of success. There was no dulness in its programme during this time, and not only was the optical department a

great attraction

to both the scientific and the non-scientific members of the general public, but many remarkable pieces of electrical apparatus were exhibited and explained. The then crude attempts to illuminate by electric light were demonstrated and explained, and the great induction coil was built.

This giant coil, which habitues of the Polytechnic will remember standing on the small platform in the Central Hall, was designed by Professor Pepper and Mr. Apps, the eminent electrician, and weighed 15 cwts., the ebonite alone turning the scale at 478 lbs. The primary wire weighed 145 lbs., and was just over 1½ miles long. The spark produced by this giant coil was 2 feet in length, and was found by experiment to be sufficiently powerful to kill a sheep instantaneously.

Mr. Pepper's reign at the Polytechnic lasted roughly 10 years from the first production of the ghost illusion, and he resigned his post as manager in March, 1872, having during that time produced a succession of scientific novelties dressed in attractive and popular guise. During that time it was the rule, rather than the exception, to find the gangways in the large theatre blocked by persons standing, and the doors and entrances filled by others standing on chairs, in order to see over the heads of those in front. The same people returned time after time, and with regard to the ghost illusion in particular, some persons were effected by a description of mania, and declared that the appearances must be due to supernatural agency.

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* We consider that, with reference to the articles referred to, this Journal has been highly honoured by the kindness of Mr. Wilkie.—EDITOR.

After leaving the Polytechnic, Mr. Pepper travelled in America on a lecturing tour, and at the present moment I have before me the syllabus of his Chicago series in March, 1874. Here, however, the fame of the ghost had preceded him, and we find that he was compelled to wind up every lecture with this illusion without regard to the subject matter of the lecture.

On his return from America, the Professor produced at the Polytechnic a very elaborately illustrated lecture on "The Sun," in the course of which a large number of beautiful dioramic pictures and some very intricate spectrum experiments were exhibited.

In 1879, Mr. Pepper, in conjunction with Mr. Walker, the well-known organ builder, produced in the large theatre at the Polytechnic one of the most perfect illusions with which his name was ever connected, but I believe I am well advised in saying that the illusion was absolutely the invention of Mr. Walker. It was a

grand stage effect,

but at that time business was certainly not being pushed at the Institution, a period of decay seemed to have set in, and the illusion did not receive the amount of attention which it deserved.

Not meeting with financial success, Professor Pepper accepted a post as public analyst in Australia, where he lived for 10 years, from 1879 to 1889, giving also occasional public lectures, many being at the Gaiety Theatre, Brisbane. He also gave a series of lectures in connection with many of the scientific societies.

At the end of that period, Professor Pepper returned to England, where he resided until his death, which removed from our midst a personality always regarded with respect and affection by all those with whom he came into contact at the Polytechnic. A polished gentleman and a sincere Christian, he never let slip an opportunity of impressing upon his hearers that the man of science by endeavouring to penetrate deeply into the hidden secrets of nature was guilty of no irreverence, and that the idea that science and unbelief go hand in hand was totally devoid of foundation; and the writer well remembers the impressive manner in which the Professor would wind up his astronomical lectures.

With arms and eyes raised he would repeat those beautiful words of the Psalmist "The Heavens declare the Glory of God, and the firmament showeth His handiwork."

Silhouette or Shadowgram Slides for the Optical Lantern

By Theodore Brown

No 16.

Street Arabs at Play.

THE subject of the sixteenth mechanical slide of this series is one that will appeal to every inhabitant of a big city. Who has not seen the street arabs at play, either in the less frequented streets or in the parks and commons that are to be found in nearly every town? Whatever particular form of play they may be engaged in—be it racing or "turning the wheel," or turning somersaults on the park railings—they throw their whole energies into it, and though very often their games are characterised by undue roughness and noise, yet no one can doubt but that they extract from them a vast amount of pleasure and mirth.

The present silhouette slide, then, is an attempt to depict street arabs at play, and the success of the attempt may best be seen when the slide is actually made and exhibited in the optical lantern.

As a central figure, a boy engaged in the pastime known commonly as "turning the wheel" has been chosen.

The framework employed in the construction of these mechanical slides has been so often described that it would be quite unnecessary for me to again describe it here. It is sufficient to say that two glasses are used, one fixed and the other movable.

I will now deal fully with the manner of fitting up the fixed glass. A small block is glued to the centre of the interior surface. This block is shown in the sectional diagram (Fig. IV.).

The body, arms, and legs of the boy are now cut out of a piece of thin metal to the proper shapes shown in Fig. I. They are then pivoted together in the correct positions. To keep the limbs from falling too far, and assuming utterly impossible attitudes, small tongues of metal are bent up at right angles in the necessary places on the body and upper parts of the legs. This operation has been fully described in a previous article in this series ("The Fighters," No. 10).

Now, out of a piece of fretwood a small wheel is turned, with a groove round its edge. The diameter of this wheel must be a trifle smaller than the width of the boy's body. It is then glued to the body on the opposite side to that on which the limbs are pivoted, as shown in Fig. I. and the sectional diagram (Fig. IV.).

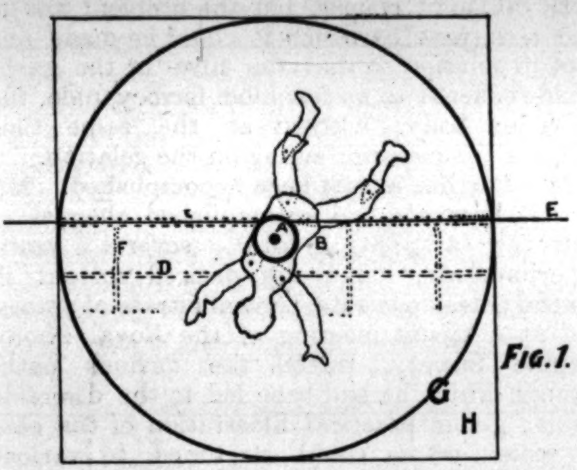

FIG. 1.

The point of a fair sized flat-headed screw is now nipped off, and a hole bored through the centre of the wheel and body of the boy, just large enough to admit the screw, which is then thrust through it, and screwed into the centre of the wooden block glued on the surface of the fixed glass (Fig. IV.).

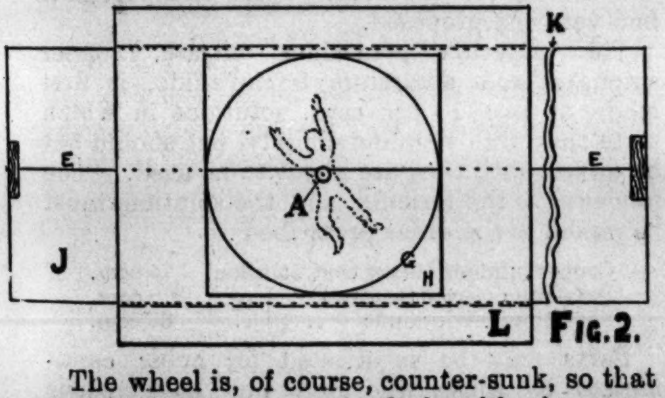

FIG. 2.

The wheel is, of course, counter-sunk, so that the head of the screw is flush with the outer surface of the wheel. The boy and wheel fastened to his body can thus be made to revolve on this screw.

The necessary information concerning the fitting up of the fixed glass having been given, we come now to the sliding glass (J, Fig. II.), the chief duty of which, it may be remarked, is to furnish the motive power for causing the young acrobat to turn somersaults.

Its length, to a certain degree, is optional, but the longer the better, for the longer it is the more effective will be the revolutions of the boy as seen upon the screen.

Two small blocks of wood are glued on its exterior surface in the centre of the extreme ends as represented in Fig. II. Through each of these blocks a small hole is bored horizontally, through which a piece of thread (E, E, Fig. II.) is passed and secured by means of knots. The thread is not perfectly taut, but is sufficiently slack to allow of its being once passed round the groove in the edge of the wheel on the street arab's body.

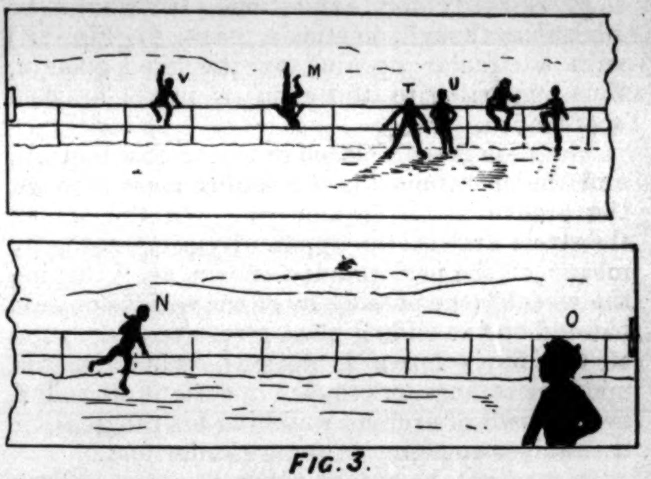

FIG. 3.

Thus, when the sliding glass J is pushed or pulled through the groove provided for it in the framework of the slide, the thread passing round the wheel will cause it, and the boy to which it is glued, to revolve.

On the sliding glass J, is painted in dead black a long continuous fence, the top rail of which is on a level with the thread E. The thread and its motion is thus hidden from view.

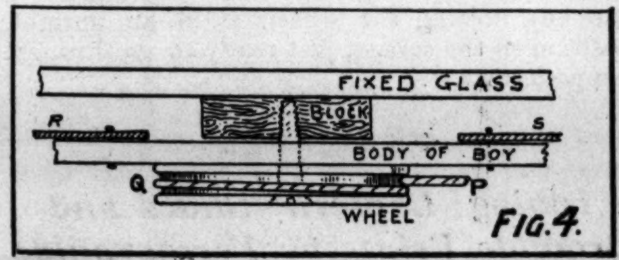

FIG. 4.

Various figures as M, N and O (Fig. III.) are also painted on this glass in different attitudes. This part of the work is left to the reader's own taste and discretion, but I might, in passing, briefly call attention to the look of dignified astonishment portrayed on the face of O; the extremely graceful attitudes of T and U; the evident delight of V; and the somewhat precarious attitude of M!

It will be noticed that the figure O is considerably larger than the other figures. This is to give the idea of perspective. He is supposed to be standing in the foreground; the arab turning the wheel will therefore pass between him and the remote fence.

When the sliding glass has been so prepared and fitted in the groove in the framework with the thread passed once round the wheel, the slide is ready for exhibition. It would be advisable, though, to stick a mask (G, Fig. II.) with a circular opening on the fixed glass H, thus imparting to the slide a more finished appearance.

The slide is then placed in the optical lantern, and the operator pulls the sliding glass through the groove in the framework. On the screen the street arab is seen apparently progressing by means of the performance known as "turning the wheel" (the passing by of the various objects painted on the sliding-glass gives the impression of the boy's forward motion), whilst seated upon the railings, or grouped in various attitudes, are a crowd of urchins watching his progress, or themselves engaging in some similar feat.

It may not be out of place to again remark that the boy's limbs are kept from falling too far by mean of the tongues of metal on the body.

It will be well to note the introduction of the thread attached to a sliding glass as a means of actuating figures, as this method will probably be employed in future slides.

In conclusion, when the slide is first placed in the lantern, the operator should be careful to see that the sliding glass is so placed that the principal figure of the scene, namely, the boy turning the wheel, is in an upright position on the screen, just ready to go through his performance.

Toning Lantern Slides and Bromide Prints by Ferrocyanide of Copper.

ALTHOUGH the colours, various shades of black, produced by the ordinary development of lantern slides and bromide prints are so far satisfactory, it is apt to become monotonous when any considerable number is exhibited; and hence the desire, by some method of toning, to secure various shades of other and especially warmer colours.

Success in this direction, the *Scientific American* explains, has generally come through the use of some of the rarer metals, gold, platinum, iridium, uranium, etc., although there always seems to have been a feeling that copper, itself one of the coloured metals, should lend itself to a cheaper and probably better method than either of them.

It was easy enough to make the insoluble ferricyanide of copper, but the problem was to find a solvent by which it could be made and kept in solution so that the silver of the image could reduce it to an insoluble ferrocyanide, the colouring body, without at the same time staining the paper or acting on the gelatine.

And this has at last been accomplished. Mr. W. B. Ferguson, an accomplished chemist as well as a Q.C., after several years' experimenting, found the desired solvent in neutral potassic citrate, neutral citrate of potass, and at a recent meeting of the Royal Photographic Society, traced the devious paths through which he had been led to the desirable result; giving practical illustration of the ease by which prints could be toned to various colours from deep black to

bright cherry red,

the only modification being the time they were left in solution; and showing lantern slides in all these colours. Through these paths it is needless to follow him, but it may be said at once that the discussion that followed showed that in the opinion of those present the method was the best, as it certainly is the cheapest that had yet been proposed.

The material, potassium citrate, copper sulphate, and potassium ferricyanide, is first made up into 10 per cent. solutions in which state they will keep indefinitely, but should not be mixed until they are about to be used. The following is the formula, and the solutions must be mixed in the order prescribed :—

Copper sulphate (10 per cent. solution)	75 ccm.
Potassium citrate (neutral) ..	570 ccm.
Potassium ferricyanide	66 ccm.

Parts may be substituted for cubic centimeters by those who may not have metric measures, and if half drachms are taken for parts the result will be very close to the quantity prescribed.

To those having a doubt as to how best to set about making 10 per cent. solutions it will be sufficient to say, that as the dealer's ounce contains 437·5 grains, all that is necessary to make that quantity into a 10 per cent. solution is to mark a bottle at the point reached by 9 ounces and 50 minims of water, put the ounce into the bottle and fill with water to that point. Each measured minim of such a solution will contain one grain of the substance in solution. With liquids instead of solids, the bottle should be marked at the 10 ounce point, a measured ounce placed in the bottle and the bottle filled up to the mark with water.

In toning with this solution of cupric ferricyanide in potassium citrate, the soluble ferri salt is supposed to be by the action of silver of the image reduced to the insoluble ferro, which is deposited in situ; and being a bright red, the various shades of colour arise from the black of the original image showing less and less through that red until it ceases to show at all. The method of toning is simplicity itself, all that is necessary being to place the developed fixed and washed slide or print in the solution and when the desired colour has been reached, to wash in a few changes of water. After use the solution is thrown away.

A Plea for Scenic Effect.

By HOWARD STUBBS.

THE writer of this article makes no apology for again taking up the cudgels in defence of dioramic and pictorial display for the optical lantern, for notwithstanding what some exhibitors have written and said to the contrary, there are not wanting signs of a re-awakened interest in this charming branch of our art. This leads one to hope that there are yet those amongst us who have souls above plain photo slides at sixpence apiece, and vile "commercially" coloured ones at eighteenpence.

There are, however, a large number of exhibitors who have such sublime faith in their own oratorical powers that they have allowed this commercial spirit to enter largely into their shows—forgetting, apparently, that if a lecture is to be illustrated at all, it is essential that the pictures should be worth looking at. They forget, too, that from time immemorial the public have been prone to associate the lantern with being entertained and amused.

Now, personally, I fail to see what possible objection there can be to the introduction of an effect picture into a lecture, say, on travel—providing, of course, the thing is well and judiciously done. Let us suppose the subject is an Italian tour, and the picture on the screen depicts the well-known proportions of that massive and imposing edifice, St. Peter's at Rome. You expect to stagger your hearers by informing them that the main front of this huge pile is 160 feet high and 396 feet wide. Yet your audience will be quite unmoved by the fact. They will be willing to take your word for it; but with nineteen out of every twenty persons present the figures will simply go in at one ear and out at the other.

Now, why not introduce an effect such as was described in these pages by Mr. Edmund H. Wilkie recently. Let your audience see the vast building outlined with its (say) Easter illuminations. Show a pretty dioramic change to the interior with its huge cross of fire and its crowds of worshippers. Believe me it never fails to "catch on" if done well. An effect of this kind is worth a bushel of plain photographic slides.

So many lanternists to-day breathe only in an atmosphere of spindles and sprocket wheels that methinks I hear one of their number exclaim: "Your doctrine won't do, my friend; these things have long since had their day." But did you ever give the public an opportunity of seeing the high-class article, my friend? Possibly you were content with the rubbish—your audience were not.

But do not misunderstand me. I am fully cognisant that slides, of which the one representing a gentleman with rat-swallowing proclivities may be taken as a type, have been entirely superseded by the advent of the cinematograph; and rightly so, for such monstrosities were distasteful to any person possessing the slightest degree of artistic taste. But why, I ask, should **animated photographs** supersede the charm of scenic display? Surely a cinematographic film and a high-class set of effect slides are in no way synonymous.

Let me cite an instance of what I mean. In my own collection of effects, which is large and varied, I have one particularly beautiful and striking set, consisting of three slides. Slide No. 1, the basis of which is a photo from a line drawing made on a large scale, depicts the laboratory of a magician, with all the various paraphernalia usually associated with the abode of the gentleman versed in magic arts and incantations. The magician is "discovered" in consultation with a young gallant, and on the right of the picture is seen a handsomely draped mirror, immediately in front of which is a large chaffing dish. The effects, which are thrown by slides 2 and 3, are as follows:—From the dish there bursts forth a volume of vapour, ever changing in hue; and this having cleared off, a curtain before the mirror is raised, revealing the half length picture of a beautiful woman. The curtain descends, and is again raised; but now the form of the woman has given place to a scowling Mephistopheles.

Now it would be obviously possible to get up such a scene as this before a cinematographic camera, after the fashion of so-called "life model" slides. But however apt the models, however lavish the accessories, etc., might be, the whole thing would lack conviction. It would lack, moreover, that charm of colour inseparable from the successful realisation of an effect that is essentially scenic in character. Imagine the study of Dr. Faustus being represented at a theatre in monochrome. The idea would be too ludicrously funny for words!

We live in a prosaic age, and the demand for realism is great. By all means, then, let the public have it; but do not imagine that the real can ever wholly supplant the ideal. My own experience is that there is now, as ever, a large section of the public which fully recognises and appreciates the splendid scenic capabilities of a bi-unial or triple lantern.

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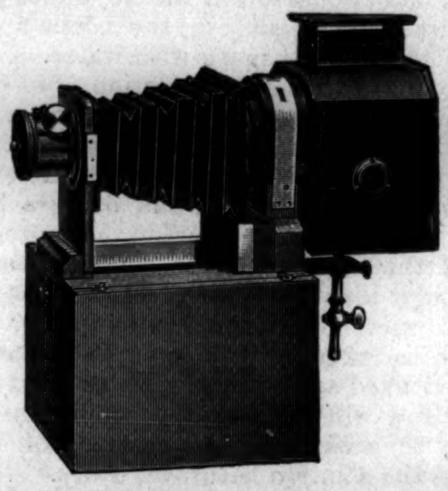
NEW APPARATUS.

The recent National Photographic and Allied Trades Exhibition, which was held at the Portman Rooms, afforded one the opportunity of seeing the latest apparatus both in connection with photography and lantern work. About 70 stands were occupied with a good supply of apparatus, etc., and many interesting inspections were made by the numerous visitors who attended. In connection with lantern work, there was perhaps nothing startling in the way of special appliances besides what had already been brought before our readers. The entertainment departments, *i.e.*, lecturettes and cinematograph projections were excellently carried out by Messrs. Hepworth. In the course of these lectures both ordinary slides and cinematograph films were employed alternately. For the former a bi-unial was used, and when changing from one instrument to the other a fancy proscenium curtain was flashed on from the bi-unial, on a special space on which the cinematographic pictures were depicted, which gave an excellent effect.

MATTHEWS' LITTLE BEAUTY LANTERN.

The latest fitting in connection with this lantern is a bellows attachment as shown in the illustration. This popular lantern has now been before the public for a few years and seems to be liked immensely by those who use it. The lantern packs up in the space of 8¼ by 7½ by 6¼ inches, and weighs about 5 lbs.

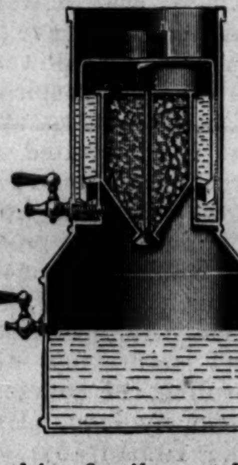


PRIMUS GOODS.

In the latest list issued by Messrs. Butcher & Son, one will find both photographic and lantern goods of all kinds. We have often been asked where to get sundry lantern parts. This firm is making a special feature of this, and any particular part can be supplied from stock; a lantern peephole, bit of rackwork, fronts, in fact, any part of a lantern may be obtained separately.

DREADNOUGHT ACETYLENE GENERATOR.

Mr. W. Tylar, of Birmingham, has brought out a new generator for acetylene gas. It is said that he had long been on the look out for a generator that was absolutely reliable and which required no attention, as some people knowing little of such appliances had a certain amount of fear in using them. This particular style filled the bill as the saying goes and there was nothing to fear about it. Names were suggested for it, "Fear it not," "Fear not," "The dread it not," "Dread-not," and this finally settled down into "Dreadnought." We give a section



of this simple generator. The carbide for use with it is granulated, and when the gasometer bell settles down, *i.e.*, is about empty, it presses open a small valve which allows a small quantity of carbide to fall into the water. The bell container is of ample capacity to hold all the gas that can be generated from one "drop supply." The bell is, of course, constantly going up and down. This generator can be used either domestically or for lantern use; with the latter one charge is said to give an efficient light with a double burner for about two hours, but for household use a light of 15 candle-power may be obtained for about eight hours. Of cause, in the latter case, a very small burner is employed.

TRILBY LIMES.

We recently took at random a tin of these limes from a large stock which was manufactured by W. H. Assender & Company, Limited, and trying them found that they had a good appearance, were very accurately turned, the hole in the exact centre, and they stood well under an intense jet, and gave a most excellent light. It is claimed that the limes are treated to a chemical process after being turned; be this as it may, one of these limes, even if placed in water, takes a considerable time before it slacks and falls to pieces. We think that the Trilby limes, as per our sample, fulfil everything that the makers claim for them.

THE BROWNIE CAMERA.

The Brownie Camera is the latest production of Kodak, Ltd., in fact it is a miniature Kodak 5 by 3 by 3 inches. The pictures taken by this camera are 2¼ by 2¼ inches, and are very distinct. The shutter is on the ever set style, and either instantaneous or time exposures may be given. It holds film cartridges, each cartridge containing six exposures. The camera and films being of the well-known daylight loading class and being of such small dimensions, will be the means of enlisting thousands in the ranks of amateur photographers, who, after experimenting with this five shilling camera, will eventually become purchasers of Kodaks of larger and higher class. The introduction of this miniature Kodak by the Kodak Company is considered an excellent move. The invitation is thrown out practically as follows:—Would you like to become an amateur photographer? If so, Kodak, Ltd., will supply you with a good camera, the cost is five shillings only. Thousands will buy one to try, and thus a large proportion of the purchasers will find matters so simple that they will be retained in the ranks, gradually doing better and larger work with the higher class of apparatus manufactured by Kodak, Ltd.

PYRAXE.

Pyraxe is manufactured by Messrs. Hauff & Co., the well-known introducers of the developers amidol, metol, ortol, etc. Pyraxe is practically pyrogallic acid in crystals, and one pound of it can be got into the size of bottle which is employed to hold one ounce of the ordinary pyrogallic acid. This Pyraxe is used in the same way as the ordinary pyrogallic acid, but there is a tremendous saving in bulk. It is introduced into this country by Messrs. Fuerst Bros., who are the sole importers.

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Correspondence.

STEREOSCOPIC CINEMATOGRAPHIC EFFECTS.

To Mr. J. Hay Taylor, Editor.

SIR,—I have sometimes wondered that some kinematograph experimentalist has not tried taking the negatives on two separate films, so arranged behind two front objectives that an alternate image is taken with a shutter working alternately in front of each objective, which can be so distanced apart, converging on the object to be photographed, as to give a stereoscopic effect, when by the converse of the negative process the resultant positive images are alternately projected on a screen.

Although this method involves the use of two films and other duplication of details, the films themselves need be only half the length of those now in general use, to last the same time.

Moreover, on account of the alternating luminous images, instead of the alternating shutter between the changes, a reduced speed would doubtless be permissible, with consequent steadiness and continuity of image, amounting to an almost, if not quite, obliteration of the flicker effect.

As an old lanternist associated with the production of several lantern and shadow effects at the old Polytechnic Institution, I have naturally been much interested in this subject, and am now experimenting on a somewhat similar idea to that embodied in my illusion patent of 1879, whereby two lantern views could be shown slowly alternating, and projected through one objective on to the screen giving the dissolving view effect.

Yours faithfully,
JAMES J. WALKER.

PATENT INTELLIGENCE.

The following List, relating to current Patent Applications, is compiled expressly for the "Optical Magic Lantern Journal" by W. P. Thompson & Co., Patent Agents, of 322, High Holborn, London, W.C., to whom all enquiries for further information should be addressed.

No. RECENT PATENT APPLICATIONS.

7470. 23rd April, 1900. Clifford Boisragon Winter. Improvements relating to full size view finders for twin lens cameras.

7560. 24th April, 1900. Arthur Sinclair. Improvements in the production and reproduction of animated photographs.

7668. 25th April, 1900. John Alfred Prestwich. Improvements in kinematographic apparatus.

7684. 25th April, 1900. Réné Bünzli. Improvements in means for exhibiting animated series of stereoscopic or other views.

8137. 2nd May, 1900. The Photographic Association, Limited, and John Le Couteur. A method of showing titles beneath lantern slides and other transparencies, and for the projection of titles to appear in white on screen.

8171. 3rd May, 1900. Henry Rheinlander. Improved filter or screen for photographic purposes.

8178. 3rd May, 1900. William Henry Harvey. Improvements in prism telescopes.

8415. 7th May, 1900. Oskar Münsterberg. Improved means of obtaining intense heat for limelight and other purposes.

8436. 7th May, 1900. Simon Biheller. Improvements in lanterns for incandescent gas lights and the like. (Complete.)

8674. 10th May, 1900. Oliver Imray (A. Luino & Co., Italy.) Photographic apparatus for taking panoramic views.

8705. 11th May, 1900. Frederick William Carter. A photometer whose adjustment depends on observing the distinctness of a diagram. (Complete.)

Copies of the following specifications may be obtained by remitting 1/- for each specification to W. P. Thompson & Co., Patent Agents, 322, High Holborn, London, W.C.

SPECIFICATIONS PUBLISHED.

9954 of 1899. Cadett, Macculloch & Dickinson. Apparatus for displaying animated or zoetropic pictures.

11466 of 1899. Thorp. Method of and means for rendering photographic and other pictures of objects visible in their natural or in other desired colours.

13310 of 1899. Talbot. Lanterns for incandescent gas lighting.

5451 of 1900. Wolff. Appliance for producing a rapid consecutive movement of pictures in apparatus for exhibiting animated pictures.

9200 of 1899. Swaab and de Lamprecht. Coin-freed apparatus for enabling pictures to be exposed or viewed.

15753 of 1899. Boult (du Hauron). Production and exhibition of photographic representations in natural colours.

5292 of 1900. Frawley. Kinematographic projection apparatus.

Notes and Queries.

Jashanmal R. Kirpalani & Co. (Kirachi).—We note that you want a good operator, mechanic and business man of integrity, and, as we understand your letter, you wish us to send such a person to you—to travel throughout India, Burmah and Ceylon. We cannot accept the responsibility of making a selection, but will send particulars to someone who we consider thoroughly up to the mark, and will ask him to communicate with you.

N. Pachcovsky.—The coloured sheets for transferring to lantern slides are printed in Germany, but we are unable to supply an address; but if you will write to Mr. Ed. Liesegang, publisher, etc., Dusseldorf, he will probably be able to supply particulars. He publishes a magazine devoted to lantern matters.

G writes:—"I wish to expose a cinematograph film, the subject is a person standing on a pedestal, I wish to make him burst into smoke and vanish instantly. How can I do this? I have never before troubled you with questions, but seeing you take great pains to explain matters to your readers, I make bold to address you." *Ans.*—Expose your figure with proper gesticulations, and finally get him to jump upwards and then on to the floor, exposing the film meanwhile. A stop can then be made whilst some gunpowder is placed on the pedestal; when about ready to fire this start the cinematographic machine again and proceed with whatever may be in your intended scene; after the film is developed, cut the film so as to catch the figure in the air a little above the pedestal and join it to the puff of smoke, which should be at least as big as the man's body. When run through the lantern the figure will appear to be blown up and away. Many ridiculous effects may be made on this principle.

T. Denton.—Make the model in wood and then have it cast in brass; it should only cost a few pence.

W. Burrows.—(1) There is no need to put any alum into the water tank to keep the heat from the films, water itself is just as good. (2) We never heard whether the company went to allotment.

J. S.—(1) For the black dull varnish, mix lampblack with gold size and dilute with turpentine. (2) Mix Chinese white with water and add a very little gum for the white ink.

Will Mr. Matthew Honour please forward his address' we have an important offer to lay before him.

Coulson & Co.—We note that you state that you can only get a sharp picture with the particular cinematograph which you have when the picture is about 5 feet in size, and that if you try to make it of larger dimensions it is out of focus. If the apparatus is brought further from the screen and the distance of the lens adjusted properly, we fail to see why it will not give a larger image. We can only think that you have omitted focusing or that your letter means something different to what you lead us to understand. If the apparatus was specially made for an instrument of the peep show class, and you want to use it with an ordinary lantern as you suggest, it is possible that very little range was given for focusing. Unscrew the lens from its "arm" or other support, and hold it in front of the cone of light for a moment until the image is sharp. You will thus gain experience.